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Independents React to IBM, Open Door to Bargains

By Michael Merritt
Of the CW Staff

When your independent peripherals salesman comes knocking at your door, he's going to have a new bag of tricks, all of them inspired by IBM's June 1 price cut.

The new offers range from straight price cuts to fancy lease plans to price increases on high-performance equipment. They are all directed, though, at keeping business by giving users a better deal.

A CW survey of several major independents revealed the following:

Like many of the independents, Memorex is wary of quoting prices in public. The company shaved some prices, notably 5% to 15% on disks, but a few prices

are now higher than IBM's. Also, the Memorex lease is quite close to IBM's, so there are termination charges when upgrading — "A lease is a lease."

Calcomp is continuing to price slightly below IBM, counting on superior performance to make its sales.

Spotlight on User's Lib

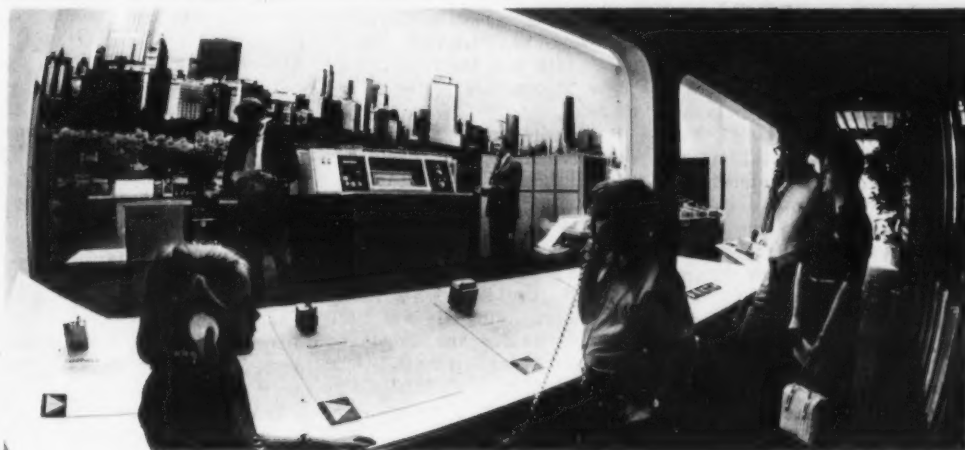
Prices have been cut an average of 10% or less. Calcomp has no termination charges for upgrades, and allows a 70% purchase credit, as opposed to IBM's 50%.

Another strong, silent type, Ampex lowered disk prices 1% to 5% and increased tape prices 2% to 6%.

Popular disk configurations have been cut the deepest, the company said. Leases up to five years are available, and upgrades don't cause termination charges. Ampex is pushing complete peripheral replacement — tape, disk, and core.

Along with many price cuts Potter increased some tape drive prices, particularly on 30-day rental for drives with advanced capabilities. The company introduced one- and two-year leases. Termination is allowed only in the second year of a two year lease, but there are no charges for up- or down-grades.

Telex unleashed three fancy marketing plans to counter the IBM thrust. The rental accrual plan gives users several free months' equipment use —
(Continued on Page 4)



Life in a Fishbowl

If you've ever felt your DP center was located in Grand Central Station, things could be worse. It could be in a museum. Visitors at Chicago's Museum of Science and Industry listen to explanations of the Park District's Univac 9400 system on display in a simulated park environment. The system processes payrolls and keeps track of equipment while a steady flow of museum visitors look on.

Has Read/Write Mag Stripe

Credit Card May Cut Losses 25%

By a CW Staff Writer
LOS ANGELES — A credit card that can keep a record of purchases and prevent the user from exceeding a preset limit has been developed by Telecredit. Credit industry spokesmen say its use could cut by 25% money lost through card misuse. The card is not commercially available yet, according to Tele-

credit, which received a patent on it this year.

The card has a magnetic stripe that records both the monthly credit limit and the total purchases during the month. The merchant would use an inexpensive off-line terminal that would automatically add new purchases to the existing monthly purchase total and compare the total to the limit.

If the limit was exceeded, the merchant would phone the authorization center for further instructions.

If the buyer was making his first purchase of the month, the merchant's terminal would automatically set the purchase total back to zero.

The terminal has no display, and neither the merchant nor the cardholder can read what is written on the magnetic stripe, Telecredit said.

Credit card company loss rates vary widely, but interviews with several credit card security experts indicate that from 25% to 50%

of the losses are from fraudulent use of cards. People who cannot pay their bills, either because of change in circumstances (such as job loss or illness) or because they ran up too large a bill

(Continued on Page 2)

Two Smaller B6700s Face Off With 155

By a CW Staff Writer

DETROIT, Mich. — By restricting memory and peripheral processor complements, Burroughs created two new models of the 6700 series, calling them the 6711 and 6721. Less flexible brothers of the 6712 and 6722, they are the lowest priced computers in the series.

The 6700 series is modular, with a choice of memories, CPUs, I/O and data communications controllers. The two new computers are available only with the slowest, 1.5 μ sec, memories in sizes ranging from 384K (bytes) to 1,536K.

For this compromise, users end up saving several thousand dollars a month.

The 6711 is the single CPU version, offering the 2.5 MHz (400 nsec) processor. The 6721 can be adapted to a dual processor configuration.

Rental for the 6711 with 384K, one I/O processor, four data channels, console, memory tester, and maintenance processor is \$13,600/mo. A 6721 with two processors and eight channels costs \$20,300/mo.

Prices for similarly configured

6712s and 6722s are \$15,900 and \$23,750 respectively. These models have a maximum memory size of 6 Mbytes.

Other than the memory constraints, the new models may have only two central processors, two I/O processors, and two data communications processors. In a full boat there is a maximum of 16 I/O channels.

Other models of the series may have up to three CPUs, and three I/O processors for a maximum of 36 channels, and 12 data communications processors.

In other respects the 6711 and 6721 are identical with the other 6700 series computers. The machines use a 48-bit data word, with three additional bits for control and one bit for parity.

They offer programmer-independent virtual memory through program segmentation, memory allocation, and re-entrant code. The Master Control Program operating system enables multiprogramming and multiprocessing.

The 6711 and 6721 are program-compatible in the 6700 line. System expansion can be

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Army DP 'Loses' 100 Trucks

By Joseph Hanlon
Of the CW Staff

WASHINGTON, D.C. — The Army "lost" 100 trucks valued at \$1.5 million because it forgot to list them in its computerized management information system (MIS), according to a General Accounting Office (GAO) report.

An MIS isn't much good if the data is not put into it in the first place, and data in the Army system was so poor the Army was "unable, with any degree of reliability, to determine its needs for equipment," the report declares.

"Because of questionable validity, some inventory managers refused to use information" from the computerized system. "Instead, the managers used data, also of questionable validity, that they developed through estimates of personal knowledge," GAO states.

Much equipment was never listed or was listed incorrectly. When the GAO found the 100 trucks, they had been in storage for almost a year "and could have been used to fill urgent needs during the storage period" if anyone had know of their existence.

In addition to problems caused by clerical errors, the GAO also found the Army had no procedure for listing equipment in transit, undergoing assembly, or owned by one command and stored by another.

A second computerized MIS is supposed to tell the Army what equipment each unit is authorized to have, but its data was just as bad as that in the other MIS, according to the GAO.

Valid requirements, particularly for units in Vietnam, were simply not listed. On the other
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150,000 Visitors to Benefit From Museum DP Project

By a CW Staff Writer

BOSTON, Mass. — New, younger computer users, 150,000 of them a year, is one goal of a new project by the Children's Museum here. The museum plans to build a computer center to be used by all its visitors, which number about 150,000 annually.

The center would demonstrate how computers could meet people's needs, and perhaps find new uses of computers, according to Richard Gardner, developer of the project.

Gardner told CW the center might also serve to evaluate software and hardware, and he is on a campaign for donations of every type and variety.

Whether the museum can obtain a large mainframe is not his prime concern, as only about

600 sq ft have been allocated for the computer room. It appears emphasis will be placed on the use of terminals to access any of the several time-sharing services in the New England area.

Gardner has formed a semi-official committee to aid in finding the hardware, software, and financial assistance necessary for his project, and calls the group the Friends of the Children's Museum Computer Center.

Among the projects contemplated for the Friends are a "computer city of the future" where children may see how computers might aid them and their families, a simulation of a flight to the moon, and other less technical items like games.

The needs are divided into

three levels or sub-groups, Gardner said. The first would be an advisory committee, comprised of technical experts. The museum's location is convenient for this, he agreed, being near Harvard and MIT.

He also said many of the computer experts in the educational community had expressed interest in assisting the museum in this effort.

A greater task will lie in assembling the "resource group" and "working group," he said.

The resource group will be comprised of industrial and financial-type contacts, with the goal of obtaining the necessary hardware, software, technical assistance and terminals, supplies, etc. for free or at reduced rates.

The working group would include programmers, instructors,

and occasional lecturers willing to donate part of their time for the ongoing program.

Meeting the target date of Oct. 1 may be a difficult task for the Friends, but Gardner is striving to meet the goal of helping determine the validity of social and technical uses of computers in the "real world" environment.

The Children's Museum is located on the Jamaica Way.

GAO Says Poor Input Makes Army Information Systems Unreliable

(Continued from Page 1)

hand, requirements were listed for units that did not actually need the equipment or for units scheduled for deactivation.

In some cases requirements were listed twice. In reviewing 18 items of communications equipment, the GAO found requirements overstated by almost 10%.

Finally, the GAO noted it took an average of six months to put changes in equipment requirements into the computer.

The data in the computers was so bad the Army was unable to determine accurately the needs for 25 major items valued at \$210 million, according to the report. It therefore submitted inflated budget requests to compensate for lack of information,

and continued to use the inflated figures to "protect" itself even after more accurate figures were available.

The report concluded: "As a result of inadequate data, the validity of fiscal 1970 budget and procurement actions was highly questionable. Unless there is significant improvement, equipment imbalances may affect seriously the Army's ability to perform its mission effectively."

Although it agreed with many of the GAO's specific comments, the Army denied this conclusion.

The Army also told the GAO it planned a number of improvements, both in the computer systems themselves, and in the data input.

Purchases Tallied on New Credit Card

(Continued from Page 1)

account for the rest of the losses.

An American Bankers Association spokesman estimated that by enforcing the limit, the Telecredit card could cut by 25% losses to normally honest people.

Since fraudulent card users invariably exceed the limit, he added, it would also cut fraud loss by limiting the use of the card.

Reduce Stolen Cards

One feature of the Telecredit card would restrict the use of new and renewal cards stolen from the mail. When the card is sent out, it would contain a special "first use code" that would turn on the caution light on the merchant's terminal.

The merchant would call the authorization center and be told that the card was being used for the first time. He would then ask for extra identification to assure that the card really belonged to the customer. Then the terminal would automatically erase the first use code.

Industry spokesman said a first use code could cut fraud losses by 25%, because half of the

money lost through fraud is due to cards stolen in the mail. And half of these cards are used by people who have not gone to the trouble of faking identification.

An optional feature of the Telecredit system would further restrict the use of stolen cards by randomly switching on the caution light, forcing the user to identify himself.

License to Steal?

A major protection against fraud would be that the fraudulent user would not know how much credit was left on the card, and would be afraid to use it too much, said Dan Norwich, operations vice-president for Telecredit.

By keeping the coding secret organized crime would be unable to read the data on the stripe, he said.

But the security officer for one credit card company called the card "a license to steal."

"With just a little technical knowledge, criminals will learn how to decode the stripe and change information on it." Once the code is broken, "There'll be a runaway loss you can't imagine."

Even without technical knowledge, he said, the card won't provide protection because "up to half of all fraud losses result from collusion between card thieves and merchants."

"If a thief using his stolen card hit the limit, he noted, the

crooked merchant could just say, 'He ran away before I could stop him.'"

On- or Off-Line

Norwich said the card is a compromise between the expensive national on-line validation systems and no validation at all. Terminals can be used either on- or off-line, and Norwich suggests merchants be tied to less expensive local computer centers.

Local purchases would be checked both by the computer and by the terminals, while out-of-town purchases would be checked only by the terminal.

Using the magnetic stripe the computer could be used for all data capture. Most purchases are local, Norwich said, and the cost of the system would be about 15 cents per purchase, compared to more than 50 cents for national computer systems.

Won't Manufacture

Telecredit invented the card and reader, which it calls Credit Register, but will not manufacture and market it alone, Norwich said.

Telecredit is primarily a check cashing authorization service, he continued, not a manufacturer. The company hopes to form a joint venture with a terminal manufacturer.

It will take \$400,000 and six months to put the system on the market, Norwich estimated. Terminals will probably cost \$200.



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Census Team Asks Privacy Post

CW Washington Bureau

WASHINGTON, D.C. — A committee appointed to review the 1970 census has recommended that additional controls be implemented to insure privacy.

In its report to Secretary of Commerce Maurice H. Stans, the Decennial Census Review Committee said a Committee on Privacy and Confidentiality should be established to assist the Director of the Census and "devote its attention to achieving the proper balance between the government's need for information and the individual's right of privacy."

The committee, continued the report, would take into account

the changes taking place in enumeration methods, data handling technology and the needs of government and other data users as well as changes in the attitude of the general public on the privacy issue.

Discussing the census statute, the group said, "An individual should never be required by the census to provide information that could be integrated with any data system not operated exclusively by the Census Bureau under the provisions of the census statute on confidentiality."

"This applies to items, such as Social Security number, that might be used to match other records with census records."

The panel further stated action should be taken, including new legislation if necessary, to insure that questionnaires from old censuses will not be released through the National Archives.

Also, the name of the respondent should be separated from the main body of data in permanent microfilm records to insure individual privacy. This separation is now made in data used to prepare published statistics.

The review committee said it believes "planning and execution of the decennial census is carried on at a commendably high level of technical competence and with proper concern for comprehensiveness, accuracy and economy."

Independents React With New Terms

(Continued from Page 1)

depending on the length of the lease — after the lease period expires. Lease terms are at regular rates however.

The exact discount is difficult to figure because of variable money costs, but they are about 8% on a one-year lease and 16% on a three-year lease.

Telex also gives a 12% discount on cash purchases and offers a 6% discount on its 36-month, interest-free installment plan.

Marshall added extended leases

to its marketing repertoire and cut rentals about 6.5% and purchase prices 5%. One- and two year leases give discounts of about 6% and 12% respectively. There is no termination charge for upgrading.

Marshall, like Calcomp's Century Data Systems, has a double-density 2319 replacement, and prefers to sell cost per byte than cost per drive.

Bryant Computer Products' line of 2319 replacements are now at least 8% below IBM prices, according to the company, with savings greater on leases. There is no termination charge for upgrading.

Storage Technology has just delivered its first 3420 replacement tape drive — before IBM delivered the original. Potter is scheduled to deliver its replacement in early 1972, and first customer delivery of the IBM

product should come in October.

The 3420 replacement is Storage Technology's main marketing move, though the company did revise prices, "maintaining the advantage over IBM." The advantage has shrunk somewhat, though.

Peripherals General has an earned rental accrual plan like Telex's that offers a price "at least 15% below" IBM's on lease plans. Because of competitive pressure, Peripherals General wouldn't discuss specific terms of the plan. A spokesman did say, though, that purchase prices are 50% below IBM's.

There are some indications things are getting rough in the independent peripheral world. A user who is a skillful — and careful — bargainer may be able to save himself a tidy bit of money.

Burroughs Strips Down 6700

(Continued from Page 1)

accomplished without reprogramming through internal dynamic allocation of hardware resources.

I/O processors cost \$3,200/mo and 384K memory modules cost \$5,000/mo.

Data communications processors rent for \$900/mo, while extra data channels cost \$125/mo.

The 6711/6721 may provide stiff competition for the IBM 370/155, renting for about \$6,000/mo less in single pro-

cessor form, and about \$200/mo less with two processors — all machines with 384K.

Comparing performance on the basis of specs is hard. Both machines use memory buffering of one sort or another, and the modularity of the 6700s makes estimating impossible without jobstream information.

Actual performance comparisons will have to be made by user jobstream benchmarks.

Deliveries of the systems will begin in June, 1972, according to Burroughs.

News Wrapup

Groups Decline Confederation

NEW YORK — Several IBM user groups have said "no thanks" to a suggestion to confederate with the oldest, Common. "Not yet, at least," they answered to Common's proposal to confederate into a single, IBM-affiliated group.

During last week's meeting of Common, several of the groups met to discuss the proposal, but differences regarding makeup of the groups, i.e. geographic or industry or special-interest orientation, caused at least temporary tabling of the measure, Common reported.

Backlog of Ohio Medicare Claims Grows

COLUMBUS, Ohio — A larger than normal backlog of Part B Medicare claims is accumulating at Nationwide Insurance Co. here due to conversion problems compounded by the addition of claims from five counties.

In anticipation of a slowdown during conversion, the change from an NCR 315 to an IBM 360/40 was scheduled for the summer, when the backlog averages 30,000 fewer claims each month than in the winter, according to a spokesman for the firm.

But problems with the software modified to conform the system with Social Security Administration specifications and an added load of 80,000 claims from the newly acquired counties have resulted in a current backlog of 230,000 claims pending.

Nationwide plans to replace the 40 with a 50 in September and the backlog should be down to "normal" by November, according to the spokesman.

New York to Keep Eye on DP Schools Claims

NEW YORK — Attorney General Louis J. Lefkowitz has directed the Bureau of Consumer Frauds and Protection to intensify its crackdown on fraudulent and deceptive practices by DP training schools. A measure that would have required the licensing of computer training schools was vetoed by Gov. Rockefeller.

Lefkowitz said his office will "be particularly watchful to determine whether the schools make extravagant claims of obtaining employment as computer programmers or related positions for graduates of the school."

'Carload' of Data on Stubs Delays Paychecks

VAN NUYS, Calif. — City employees recently received their paychecks about seven hours late, and the delay was blamed on last minute patches of the computerized payroll system. The city is trying to include on the check stub "a carload of new information" on each employee including all the variables affecting his paycheck, according to principal deputy controller George Bertram.

Computer Aids Town in Teacher Selection

HINGHAM, Mass. — Some school systems are limiting the number of teacher applications they will accept, because of inability to handle large volumes of paperwork. But putting applications on a computer is enabling Hingham to handle all applications it receives.

Is DP's Image Becoming Tarnished?

LOVELAND, Ohio — It just might be that the glory days of the image of computers are all over, if the decision of the mayor of this Ohio community can be taken as the beginning of a trend.

The finance committee decided it might be a good idea to computerize the city's tax statements and records and do the water, sewer, and trash collection billings on the same system.

They reason the computer, with a monthly lease of \$1,075, would eliminate the need for an additional city employee and greatly improve the efficiency of those city operations.

But Mayor Viola Phillips isn't so sure. She is asking for more "firsthand" information on just exactly what the computer will do for her city of some 7144 people. She wants to see the equipment work at the local IBM offices and at a site where equivalent equipment is up and running.

The mayor, it seems, would rather fix curbs and drainage facilities than have her city the proud possessor of a computer. C'est la vie!

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'Farmer' Has Acre of Computers, Reaps Data Harvest

By Thomas J. Morton
Special to Computerworld

ST. LOUIS — Here in St. Louis, the Gateway to the Prairies, Ted Bellan of "Old Mac" farms an acre of computers, reaping a harvest of data that sells for over \$47 million a year.

"Old Mac" is the name Bellan and his staff have for their company, McDonnell Douglas Automation Co., the St. Louis-based computer utility. Ted Bellan is vice president, computer services, St. Louis.

McDonnell has 105 computers nationwide. Centers in Huntington Beach, Calif.; Denver; Houston; Peoria, Ill.; Falls Church, Va.; and St. Louis dot the "Old Mac" map. Additional offices in Boston, Chicago, Detroit, and East Orange, N.J. have terminals that make the big systems available to customers in those areas.

Bellan in St. Louis runs his "farm" with the world's first commercial 360/195; two 370/155s; one 360/85; a 75; a 50; three 40s; four 30s; two 25s; six 20s; three 1800s; two 1130s; one CDC 6600; a CDC 915; one GE 440; two XDS Sigma 7s; one SEL 86; and 11 analog computers.

Bellan is an aeronautical engineer. He joined McDonnell when it was only an aircraft manufacturer after he got out of the Army in 1946. To him, data processing was only another tool the engineer had available. "From '47 to '53," he said, "it was really 'pre-computer.' We were

using the old 601 electric multiplier, and we moved into the 604 electronic calculator. Using accounting machine equipment and developing procedures whereby we could use this to do calculations, we were able to do floating point arithmetic on that old equipment."

Now Bellan has his work done on a 360/195. That's a career life within the growth of the state of the art of EDP.

Seeing the value to the engineer of the electronic calculator, Bellan chose the emerging EDP technology as his way to contribute to his company, McDonnell, the aircraft manufacturer and designer.

In 1952 the company had a card program calculator (CPC) installed. "While that (the CPC)," he said, "was far from being a computer, at least it gave us the capability of taking a problem from beginning to end instead of a step-by-step basis."

Convincing his management of the need for high speed computing equipment for

engineering applications for departments throughout the large aircraft manufacturing facility, Bellan got his computer (a 704) and the responsibility of running the Applied Math Department. That was the beginning of the operation that was to grow into McDonnell Automation Co. and later into, via a merger with Douglas Aircraft, McDonnell Douglas.

"After all," Bellan said, "those engineering and manufacturing divisions of those

Diagnosing what he called one of "the current troubles" of EDP as "computer room-itis," he said the systems people should get out of the center and place their offices with the users.

"Systems types," Bellan said, "should be as conversant with the functions of the user as he is with data processing."

"Here, for example, the systems group assigned to Wing Manufacture are in Wing Manufacture not in the Automation Center. They are responsible for developing the systems needed and thoroughly understanding those needs. They leave the bits and the bytes to the computer professionals here."

"Data processing should be conducted on this basis. The user knows what he needs. He talks to the systems type. The systems type, knowledgeable in the user's function, talks to the computer professional. Communication is better. Understanding and cooperation is more complete."

DP Profile

days were, in reality, the customers of Applied Math." They still are; though a number of outside customers have been added since then. Again it was Bellan who did the convincing of management that the computer room and people were a commodity.

Sturdy branch on the family tree.

The DM-314 Disk File System is the founder of a family line of Disk Drives from Ampex, the computer peripheral company.

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AMPEX Boulevard, Culver City, California 90230, (213) 836-5000.

Tacoma Manager Moves to Use DP To Help Run City

By a CW Staff Writer

TACOMA, Wash. — William V. Donaldson, on the job only a little over three months as city manager of Tacoma, is moving to use technology as an aid to city management.

"With so much perfectly good technology available, I don't see why we don't use it to find out more about what we are doing and how we could improve it," he said.

"Few cities are well run. The range is from complete disasters like New York City to moderate holding actions."

An investigation of the city's computer centers revealed that almost every department had its own and many systems were terribly underutilized.

Classes were set up to explain to department heads what computers can do. Under consideration is a plan to hire and assign one or two unemployed Boeing systems people to work with each department in optimizing their equipment.

Daily and Future Needs

"After improving departmental information needs, our next job is to tie them all together into a management information system," said Donaldson. "This will help us not only in the day to day operations but in defining goals and future planning for the city."

Reception of the steps taken to date has been most favorable. The department heads are pleased with the classes as they previously felt they were captives of a system they didn't understand.

The City Council is delighted over the proposed improvements as it is not now getting the information it needs for decision-making and planning.

A citizens committee recently met with a representative of Brookings Institute, a Washington, D.C. "think tank" that is largely government problems oriented.

Tacoma is not running from its problems but seeking ways of upgrading city management to meet them. With the active support of its city manager and a favorable climate among council members and taxpayers, Tacoma could well become the model of a very modern, technology-aided city government.



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Fraction of Cost**N.J. Utility Provides DP to Colleges**

TRENTON, N.J. — A public corporation has been established to provide this state's public and private colleges with millions of dollars worth of computer services at a fraction of that cost.

The new Educational Computer Center (ECC), established last winter, uses the facilities of Princeton and Rutgers universities.

According to N.J. Chancellor of Higher Education Ralph A. Dungan, the colleges have access to computer power matched by only a few business enterprises and equal to that of the higher education system of only two other states, California and North Carolina.

This computing power includes Princeton's IBM 360/91, plus two 360/67s, one belonging to Rutgers in New Brunswick, the other to ECC at Princeton.

The major hardware will remain where it is, at Princeton's new computer building and at Rutgers in a new math-computer center under construction. Special telephone lines will connect small computer terminals at participating colleges with the three machines.

Each college will thus have its own limited on-campus computer power, plus access to the more substantial power available through the ECC.

All six state colleges already are connected with the Rutgers computer. The corporation has enrolled more than 20 participating institutions, including five independent colleges.

The new system will mean access to a sophisticated research tool without peer, said Dungan. A professor at Montclair State College, for instance, will be able to run a research program as ambitious as that of any Princeton professor — without ever leaving his campus.

To students at Cumberland County College in Vineland, among others, it will mean the chance to do more than just study the use of computers in their newly updated DP course. They are now able to do their homework both on their own 1130 and, via the telephone hookup, on ECC's 360/67.

Trenton State's use of the Princeton computer

(before "transferring" to Rutgers) and a state-developed student information system provided the first dramatic proof of the potential of the ECC system. The college saved \$100,000 in faculty salaries, and gave students a greater scheduling choice, both with professors and class times.

While the scheduling system was written at a one-time cost of \$140,000, it can be used by other colleges, officials pointed out. The \$100,000 saving was achieved by advance knowledge of what faculty staffing would not be necessary.

An educational facilities information system, developed for use on individual campus 1130s, will do for space allocation what the student information system does for enrollment.

By keeping tabs on classrooms and other facilities as well as scheduling requirements, it enables administrators not only to use their available space as efficiently as possible, but to plan expansion.

Another system developed under ECC concerns library operations and will turn over to the computers an enormous amount of work formerly done by hand. The library system provides technical processing, information retrieval and interlibrary communication services, and will eventually be available to all college and some non-college libraries.

Nourished by a National Science Foundation grant of \$600,000, ECC has an agreement of a "base use level" at which Princeton, Rutgers and the corporation will trade use of each other's machine at no cost to any party.

Use by any of the three beyond that level will be worked off on a debit and credit arrangement, or billed at lower than commercial rates.

The first independent college on the system was Rider College, and Dr. Frank Elliott, president, called the setup "absolutely marvelous. Our participation in the network will let us provide a level of service to students and faculty that we couldn't possibly afford otherwise.

"It's beautiful," he added. "I don't see how we can lose on it."

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6. Assembler H (OS) A new high performance assembler language processor for OS users. Requires no reprogramming or conversion for current OS assembler users.

7. 1130 COBOL Specifically designed compiler featuring high speed compilation and fast execution for small to medium IBM 1130 users.

8. APL/360 (OS, DOS) A user-oriented program with a language designed for problem solving and a time sharing capability that lets many users work independently at the same time.

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9. Customer Information Control System (CICS) (OS, DOS) The link between your computer's data base and the applications you want to put on-line. By providing many of the standard control functions, CICS lets your programmers concentrate on coding the applications. Helps you save implementation time and cost.

10. Data/360 (OS, DOS) A general purpose data-entry program. Data is entered and verified through IBM displays, edited and written out on disk files.

11. Data Base Organization and Maintenance Processor (DOS) A system to integrate data files into a central data base for query

applications involving existing multiple customer files.

12. Generalized Information System/2 (GIS/2) (OS) A high-level query and file maintenance system particularly useful for meeting spontaneous information requirements or handling repetitive jobs.

13. Information Management System/360 (IMS/360) Version 2 (OS) Facilitates use of medium to large common data bases and accommodates teleprocessing and batch processing, concurrently or separately.

Applications

14. Project Management System IV (PMS IV) (OS) A powerful program in modular form for resource allocation, cost analysis and precedence input analysis.

15. Requirements Planning (OS) A materials management system designed to determine what, when and how much to order in a manner that will help minimize component inventories.

16. Shop Floor Control (OS, DOS) Establishes and maintains a shop order data base and provides for shop order release, status and inquiry for timely management decisions.

17. Consumer Goods System—Forecasting and Allocation (OS, DOS) Determines what amounts of finished goods to make, order or ship to stocking locations to satisfy multiple objectives.

18. General Purpose Simulation System V (GPSS V) (OS, DOS) Powerful, easy-to-use tool for simulating the behavior of systems in engineering and management sciences.

19. Bill of Material Processor (System/3 Model 6 and Model 10 Disk) Establishes and maintains basic manufacturing files describing the structure of products and their manufacturing procedures.

20. Law Enforcement Manpower Resource Allocation System (DOS) Provides ability to determine field manpower requirements, on as-needed basis and future-plans basis.

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Never once were the limitations of LED method image generation mentioned. Among these limitations are the fact that since light emitting diodes are electronic components, they too are subject to degeneration and failure; and, secondly, the image orientation of the character set

I Think Stage II Is the Greatest Thing Since Soap

About 16 years ago one of the major programs ever written was produced. The Symbolic Optimizing Assembly Program (Soap) allowed a programmer to write in symbolic, as opposed to absolute, machine code — and yet hope to produce reasonably efficient results.

In those days, when we were using drums as main stores this could be very necessary. The drums were usually 128 words around, if you weren't careful you found yourself using around half a revolution for every operand involved.

If you wrote carefully, you could bring the latency down to around a fifth of the drum, and sometimes even faster.

In particular, with binary searches, and central loops, you could really make your computer sit up and sing for you. They were great days, and I thoroughly enjoyed them.

But the problem wasn't with the days — it was with the nights. The nights when you found that you had two or three bugs in your program, were able to place them properly on the drum — and then found that, unless you changed every instruction downstream, you had just doubled the cost of doing the work! That wasn't nice.

Bought Manufacturers' Time

It wasn't nice because it was real cost that was involved — cost that appeared on real bills. During this period (at least in England where I was working) the era of company computers had not yet started. Computer manufacturers had computers — and you went to them and hired time from them while waiting for them to deliver your own computer.

You went to Oxford Circus to get time on Pegasus, to Borehamwood for the Elliott 402, or to Cadby Hall for the Leo.

My favorite was Leo, because there we ate in the directors' dining room while we were on the computer, and the directors ate very well!

These manufacturers charged you by the time of the run. So, our charges for running the job could easily double as a result of quite a small number of bugs. And that had to be explained to hard-

nosed government auditors.

Soap put an end to this type of problem. It allocated actual addresses around the IBM 650 drum to reduce the latency, but without the programmer's aid. It effectively optimized for you and was a success. It cut down the time you needed to run your program.

If you had a bug, you simply changed the symbolic code, and Soap would do what you never could do by hand — change all the instructions downstream. And it kept your times reasonable.

It was, as I said, one of the most important programs written.

But, it soon got into an argument or two. In the first place, its facilities were limited. It did not deal with the new tape units that were being added, for instance. It only provided plain arithmetic.

Soap II tried to provide new facilities, but there were bugs, and often the fast execution speed that was available in Soap I seemed to get lost in the new version.

And the second generation of computers was coming around the corner, with basically non-compatible programs. This showed the great importance of being able to protect programming investment across machines, which Soap did not do.

Idea Died

So the idea of reducing execution time by the software died, while the forces of Cobol and Fortran were triumphant.

At the time I supported Cobol and Fortran, because I argued that anything that the human coder could do, so could the compiler. I overlooked one point — that the compiler could not change the source code, the way Soap has been able to change the source addresses.

I also overlooked the fact that after the first few years there was no real push for compiler writers to produce efficient code.

But I was right in thinking that the two arguments are not incompatible. It is possible to have the virtues of Cobol, and the virtues of Soap. *Because it is possible to optimize the Cobol source language, so as to reduce execution time.*

It's possible, because Mike Kavanaugh of Optimization Sciences Inc., Silver Spring, Md., has done it.

I've written before [CW, Jan. 20, April 21], about the Cobol optimization courses that Mike has been running. But

now he has actually automated the process, and is producing alternative source input cards to reduce both time and core used. So at last Soap has a successor — Stage II — a program which provides for Soap-type improvements in execution time, while maintaining program investment, and transferability [CW, June 9].

It's great news. It is, in fact, the best thing since Soap.

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The Taylor Report

By Alan Taylor, CDP



DPMA Wasted \$119,000: Reader

The financial strength of DPMA has often been a source of pride to its leadership, who have talked about their "free, unencumbered" headquarters. However, with another \$72,000 loss just reported, those \$387,000 headquarters now appear to be encumbered — by around \$31,000 at any rate (See figure).

One reader, who very properly has to remain anonymous, has written to me suggesting how some \$119,000 could have been saved. Here is his letter:

Your articles about conditions within DPMA are accurate and being read with great interest [CW, April 14, May 26].

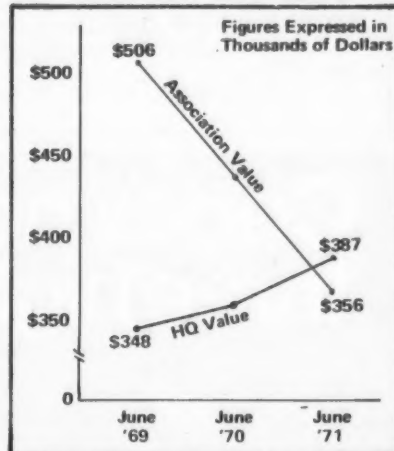
However, those of us who have bought advertising in *Data Management* or are being solicited to do so, are most concerned by the following:

The publication's circulation a little over a year ago was restricted to DPMA members and some paid subscriptions, totaling 33,671. Advertising was sold at a 1-time page rate of \$650.

Then in the Spring of 1970 they announced an increase to 50,000 circulation and upped the rates to \$975 — an increase of 50%. Note SRDS tearsheet.

This was cynically and stupidly done by the addition of 13,961 names, as per circulation audit attached, of "lists of colleges and universities, senators and congressmen and libraries." They salted the mine, and hoped to bury the details quietly in the total.

Not only are these people of no use to advertisers of EDP equipment and services, but even worse, they are absolutely worthless to DPMA. Furthermore, DPMA and its advertisers are thus subsidizing 14,000 circulation each month to the tune of \$7,000 to \$8,000 per month costs, or a total of \$85,000 to \$95,000 per year unnecessary overhead to the membership, advertisers and honest subscribers! Actually, from April, 1970 through September, 1971 issues, this 14,000 copies at 50 cents each times 17 months = \$119,000 wasted.



Comparison of DPMA's headquarters value and association net value, 1969/71 (\$000). (Sources: 1970/71 and 1969/70 reports. HQ value includes building, site, improvements, fixtures and furniture.)

To our amazement then, at the Houston meeting, the directors, who ought to be replaced for condoning this activity, voted an increase in DPMA national dues.

Thus, in this way they can bury their stupidity and cynical mistakes under a new flow of dollars from a badly led, and deliberately misinformed membership. The naive DPMA member is strictly a sucker, and from what we've seen of them, they probably deserve to be fleeced by headquarters.

This is no "confidential leak" — all the facts are public — and even brazenly publicized!

So go get 'em, and you might even uncover an honest director or two who might even be willing to become involved — and help clean up this sorry situation.

Did I hear some directors volunteering?

COMPUTERS AND MICROFILM

Is there a merger in sight?



Computerworld's editors will examine the subject of microfilm as it relates to computers in our Computers and Microfilm Supplement coming in our September 29 issue.

Both the user side and the manufacturer side of the COM (computer output microfilm) question will be explored on subjects such as:

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If you are a manufacturer of microfilm products — COM, film, retrieval systems, and microfilm or microfiche display — this supplement will provide the opportunity to advertiser directly to Computerworld's more than 37,000 paid subscribers. Our readers are interested in COM and its products — 38% indicated in a recent study of ours their

interest in purchase of COM in the next several years.

Advertising deadling for the Microfilm Supplement is September 15. Issue date is September 29.

If you are an advertiser who has felt that COM is submerged by better known products and services, this supplement is your opportunity to have your ad appear where it stands clear of others, and appear in an editorial environment that is solely microfilm.

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for rates, mechanical, requirements, shipping instructions, or call the CW representative nearest you.

Aussies Have Show, Jobs Data

BRISBANE, Australia — An exhibition of computers and peripheral equipment here next spring will be the largest yet associated with an Australian computer conference, according to local reports.

Sponsored by the Australian Computer Society Inc. (ACS), this fifth annual Australian Computer Conference will be held at the University of Queensland, May 22-26.

In a separate announcement, the society said people seeking DP employment here can correspond directly with officials of the state chapters. Inquiries should be directed to The Honorary Secretary, Australian Computer Society, Inc.:

- Canberra Branch, Box 258, P.O., Kingston, A.C.T. 2604;
- New South Wales Branch, Box R157, Royal Exchange P.O., Sydney, N.S.W. 2000;
- Queensland Branch, Box 1484, G.P.O., Brisbane, Queensland, 4001;
- South Australian Branch, Box 2423, G.P.O., Adelaide, S.A. 5001.

Afips Names Two Interns

MONTVALE, N.J. — The first two computer interns have been named by the American Federation of Information Processing Societies (Afips).

The recipients are Dr. Jeffrey H. Kulick, of the Moore School

of Electrical Engineering (University of Pennsylvania), and Dr. Clarence A. Ellis, of Bell Telephone Laboratories.

Societies/ User Groups

The grant recipients will spend a year in foreign countries, help-

ing develop computer technology. Three additional computer interns are yet to be named.

Kulick will visit the Tata Institute in Bombay, India, and Ellis will serve at the National Chiao Tung University in Hsinchu, Taiwan, China.

Emphasis is on rendering service in teaching and in the development of systems programming, applications programming, hardware and logical design.

Final arrangements are being made with host institutions for the other three recipients, Afips said.



Call for Papers

1972 SPRING JOINT COMPUTER CONFERENCE, May 16-18, Atlantic City, N.J.

The conference will review the technical progress of the entire DP field during the last five years and attempt to anticipate the developments over the next decade.

Survey and technical papers invited on: administrative and business applications; scientific applications; general and special purpose hardware, component technology; software and programming technique; computer science education and the theory of computation; administrative, employment, and social issues.

Advance notification of intent to enter paper is requested. Deadline for submission of 100- to 200 word abstract and full text (not to exceed 6,000 words) plus illustrations is Oct. 1, 1971. Six copies of manuscript and abstract are required. Only unpublished papers are eligible. Any necessary company approval should be obtained before submission.

Manuscript must be typed, double spaced, one side of paper. On first page give title, full name of author(s) with co-authors in desired order, company or university affiliation of each author, name, address, and telephone number of responsible author. Responsible author's name and page number must appear on each page.

Further information may be obtained from Jack Schwartz, technical program chairman, 1972 SJCC, Box A — Computer Science Department, Courant Institute, 251 Mercer St., New York, N.Y. 10012.

1972 INTERNATIONAL SYMPOSIUM ON FAULT-TOLERANT COMPUTING, June 19-21, Boston, Mass.

Technical Committee on Fault-Tolerant Computing, IEEE Computer Society, seeks papers on: fault-tolerant system architecture and design; testing, fault location, diagnosis and recovery; applications of error coding techniques; methods of design verification; measures of reliability and related parameters; mathematical modeling of fault-tolerant computers.

Also, error control in computer networks; graceful degradation of multiprocessor systems; system programs for testing and diagnosis; operating systems for fault-tolerant computers; hardware and software aspects of software reliability; redundancy methods in logic design; current fault-tolerant computing practice.

Notify program chairman before Nov. 1, 1971, of intention to submit. Papers of digest length — 2,000-4,000 words, must be submitted for review by Dec. 1, and be accompanied by a statement not exceeding 500 words explaining the problem approached, and the nature of the contributions.

Authors of accepted papers will prepare a typed master of the paper for inclusion in a digest to be distributed at the symposium.

Submit statement and digest to Prof. Gernot Metzger, Coordinated Science Laboratory, University of Illinois, Urbana, Ill., 61801.

1972 IEEE REGION SIX CONFERENCE, April 19-21, 1972, San Diego, Calif.

Papers invited on conference theme of Microelectronics — Systems and Applications. Topics include: MSI, LSI hybrid development/application in computer architecture and computer aided design.

Emphasis is on up-to-date oral presentations. Published transactions limited to about four pages per paper. Abstracts of 250 words should be submitted by Oct. 15, 1971 to Dr. D.C. Kalbfell, technical program chairman, c/o Instruments, Inc., P.O. Box 10764, San Diego, Calif., 92110.

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Random Notes

Proforma Reports Produced Through Leasco Response I

WASHINGTON, D.C. — Report, a time-shared service for the preparation of proforma financial statements and other management reports, is available from Leasco Response Inc. The Report software can be used to prepare risk analysis and business models as well as spread sheets and other accounting reports.

The Report user, writing English language commands, is also able to generate machine loading estimates, perform commission calculations and a variety of other analyses. Report has been installed on Leasco's Response I system of time-shared CPUs, available in principal U.S. cities.

Financial Analysis Routines Added to Cullinane Package

BOSTON, Mass. — An enhanced version of the EDP Auditor package, including a series of subroutines to perform specific auditing procedures on data files, is available from Cullinane Corp., One Boston Place, 02108.

The routines include generation of a balance range profile with a bar graph, random selection by strata, and preparation and control of confirmation notices. The \$15,000 package is designed to be used by the non-programmer financial auditor, the company said.

Compudata Business Functions Available on Boeing Network

SEATTLE, Wash. — The Casil system of producing reports on labor distribution, accounts payable and receivable, and inventory is available through the time-sharing facilities of Boeing Computer Services Inc.

Other reports generated by the system, developed by Compudata Inc., Hollywood, Fla., include purchasing, material transfer, job costs, journals, ledgers and trial balances.

Scientific T/S Installs Minipert

WASHINGTON, D.C. — A project planner can perform critical path analysis on a conversational terminal through a service now available on Scientific Time Sharing Corp.'s (STSC) network. The service is based on the recently released IBM Minipert package.

Available currently in 15 U.S. cities, the STSC implementation of Minipert is also available in five Canadian cities through I.P. Sharp Associates Inc., Toronto.

'Force' Supports Isam Files

NEW YORK — The Data Force, 875 Avenue of the Americas, 10001, has an improved version of the Force programming language [CW, Jan. 26] that allows IBM 360 users to generate self-relocating object decks for use under DOS.

Version 9A of the macro instruction-oriented language also supports Isam files. The Force compiler leases for \$900/year.

DEC PDP-11 Can Use Zeta Plotter

LAFAYETTE, Calif. — Subroutines to operate Zeta 100 series plotters from DEC PDP-11 minicomputers are available for \$1,000 from Zeta Research Inc. 1043 Stuart St., 94549.

Hardware interface and cables to interconnect the DEC and Zeta equipment are also available from Zeta.

'CPU Is Underrated'**New York Firm Aids NCR Century Users**

By Don Leavitt

Of the CW Staff

ROCKVILLE CENTRE, N.Y. — Users awaiting delivery of NCR Century series CPUs, or planning new applications for equipment already installed, can obtain systems support from Conversion Sciences Inc. (CSI).

The company specializes in working with the Century series, a spokesman explained, because many users, and even some people within NCR, do not fully appreciate the capabilities of these machines.

Services provided by CSI include systems analysis of manual operations and custom programming, and conversion of IBM 360 programs to Century-compatible coding.

On-site training in programming techniques and supervision of the installation of the Century are also available.

CSI also has its own Century and will run user programs on a service bureau basis, or make time available for the user. A series of application packages based

on programs developed by NCR are available from CSI. Much of the Neat-3 compiler language coding in the NCR-provided packages has been replaced by more efficient Level 2 Assembler Language coding in the CSI versions.

The NCR payroll runs on a 16K Century but uses some 50 overlays, according to CSI, which added that its version, designed for 32K, has no overlays.

CSI's accounts/receivable packages can be tailored to handle open item, open

category or balance forward processing. The accounts/payable and order/billing packages, also available from CSI would also be customized.

Customization makes it impossible to quote exact prices, CSI said. The payroll package costs "about \$5,000," while the accounts/receivable may range from \$10,000 to \$32,000. The accounts/payable costs from \$8,000 to \$18,000.

Conversion Sciences Inc. is at 400 Sunrise Highway, 11570.

Package Spools Printer Output, Improves Carriage Commands

WILBRAHAM, Mass. — Run times for printer-oriented programs may be cut from 10% to 40% under DOS/360 by using the Printpak "in-core" spooling package from Hansco Data Processing Inc.

"Spooling" describes the shifting of printer output to an interim storage area so that CPU processing won't be delayed awaiting completion of the lower-speed printer operation. The interim storage medium is usually available core or disk, or both.

Printpak uses the in-core approach and does not require any disk space for its operation.

Through "look-ahead" logic, the package scans the ASA carriage control characters of lines yet to be printed. Any "skip/space before print" command is converted to a "skip/space after print" command for the previous line, to optimize the printer operation.

The package can be used with programs written in Cobol, RPG or BAL. Most programs require only the modification of the printer file definition, and insertion of a special CLOSE procedure.

Printpak requires 600 bytes of storage for effective implementation, but additional storage is used as it is available.

The spooler consists of four object modules and is available for \$750, which includes documentation and maintenance.

Hansco may be contacted through P.O. Box 236, 01095.

Users Define 'Kwindex' Lists

SAN FRANCISCO — Cross reference indexes for almost any collection of data can be produced under DOS or OS/360 with the Key Word Indexing (Kwindex) package from Golden Gate Systems (GGS).

Multiple indexes based on various data in the input file can be generated concurrently by the package which includes a scanning-extraction phase, a sort and a print phase.

Data to be indexed is entered on punched cards, or tape records up to 100 characters long. Kwindex is designed to handle unblocked records but the user is free to modify the Cobol source code to accept blocked files, the company said.

The input may be formatted in any way the user wishes. One of the control card options allows him to specify the portion of the record that is to be indexed.

In the extract phase, Kwindex records every word it finds in the user-specified portion of the file. In the print phase, the user has the option of defining which words are to be considered insignificant so that they will be ignored as the indexes are printed.

The user may also set up parameters so that only desired portions of an index are printed.

The print phase, although normally used as part of a single processing run, can be used independently. The sort output can thus be run against varied sets of parameters to get different results.

The programs are written in ANS Cobol for use on the 360. The package sells for \$700 including source code, user guide and operating instructions.

Golden Gate Systems can be reached c/o Trippe, 120 Montgomery St., 94104.

'CSA' Consolidates Bank Work, Gives Customer One Statement

WALTHAM, Mass. — Commercial banks operating under DOS/360 can run several applications concurrently through the Consolidated Statement Accounting (CSA) package from Baystate Computer Center (BCC), 295 Weston St., 02154.

Phase I of the system, currently available, handles checking accounts, and regular daily interest and 90-day notice savings accounts, on a multiple bank basis.

By using a single file for the customer's multiple functions, CSA allows customers to initiate fund transfers between accounts with a single request.

CSA uses a modified version of IBM's Demand Deposit Accounting (DDA) for data entry processing. The DDA Stop-Hold program identifies the CSA input and directs it to the Consolidated program logic.

CSA is written in Assembler and Cobol, and operates in 65K. A Micr reader and a combination of five disk and tape drives are required by the \$15,000 package.

Interdata 5 Rtos Distributed

OCEANPORT, N.J. — Interdata Inc. has started deliveries, without cost to users, of the Real Time Operating System (Rtos) for the Interdata Model 5 minicomputer.

Rtos handles real-time acquisition, control and communications applications, concurrently with compilations, assemblies and other lower priority operations, a spokesman said. Interdata is at 2 Crescent Drive, 07757.

Rtos requires 24K bytes of memory, a 60-cycle clock and a memory protect feature.

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Should Data Be Blamed?

California Group to Explore Phone Overload Causes

By Ronald A. Frank
Of the CW Staff

SAN FRANCISCO — Do computer users really overburden telephone company facilities? The Public Utilities Commission (PUC) here has formed a committee to find out.

Scheduled to include representatives from the PUC staff, the Pacific Telephone & Telegraph Co. (PT&T), and telephone customers described as "large users of data and other business services," the committee will try to determine whether any one group of phone users is overloading the California telephone system [CW, Aug. 11].

The findings of this committee may well decide whether there will be additional attempts by telephone companies to propose higher phone rates for data users. Such a proposal made early this year by the PUC staff led to the formation of the

study committee.

That report said computer access lines "often have 10 times the usage of regular business lines" and recommended that a measured taxi-meter rate [CW, March 17] be approved by the PUC for all intrastate data calls.

After re-evaluating its proposal, the PUC

Communications Analysis

staff recently said it now feels data users may not be the only group causing telephone overloading. Voice business users should also be examined, the staff said.

The original PUC staff report cited studies early in 1970 at the Palo Alto

central office of PT&T which showed that local lines were "seriously overloaded due to computer access lines."

But attempts to obtain the Palo Alto data led to a statement from PT&T that a formal report "had never been prepared." All pertinent data was collected by the PUC staff "on the basis of informal discussions" with telephone company representatives, PT&T said.

"We are now satisfied that data demands were not at the root of the Palo Alto service problems in 1970," a PT&T spokesman told CW.

The Palo Alto office was examined by the staff because of a high concentration of computer users in the area, according to a PT&T spokesman. Asked if staff personnel normally inspect phone company installations, the spokesman said, "they're in our buildings all the time."

Phone company attempts to blame com-

puter users for overloaded facilities have been simmering for some time, mostly at the state level. In two states, local Bell System companies proposed tariffs establishing Information System Access Line (Isal) rates for all phone lines connected to computers. In both cases first in Ohio last year and in Illinois earlier this year, the proposals were withdrawn by Bell for various regulatory face-saving reasons after they drew fire from irate data users.

There are those who say that AT&T is determined to raise the rates of data users because it sincerely believes that this group is overburdening the telephone system. If such a charge is indeed correct (and up to now it has not been proven) the Bell System undoubtedly has accumulated pertinent information to support this position.

In this regard it will be interesting to watch what kind of data PT&T presents to the study committee. Based on its latest statements it may no longer want to single out data users.

Hiding the Truth?

It is also possible that the committee will discover that overloaded conditions mean simply that there are not enough phone lines. This would mean the phone company was to blame instead of users.

If the committee finds that no one group is making unusual demands on telephone facilities, the phone companies may hesitate to again propose Isal type rates in the future. And that type of decision would reach far beyond the intrastate facilities which will be examined by the committee.

The many computer related organizations that have indicated an interest in participating in the committee's proceedings indicates the importance of its work.

Among those are Control Data Corp., Tymshare Inc., IBM, Xerox, Varian Data Machines, Com-Share Inc., GE, Computer Sciences Corp., Remote Computing Corp., University Computing Corp., and others.

Telephone industry representatives include PT&T, the California Independent Telephone Association, Continental Telephone Co., and the Golden West Telephone Co.

Although members of the committee have not yet been chosen, the PUC has ordered that a preliminary report be issued on December 8.

Sanders Controller Replaces IBM 2700s

NASHUA, N.H. — Sanders Data Systems Inc. 723 Communications Line Controller is a plug-to-plug replacement for IBM 2700 series line adapters. The 723 allows IBM CPUs to communicate with CRTs, TTYs, and IBM terminals. A variety of Bell System data sets can be used with the unit. The controller can handle up to 64 line adapters at transmission speeds up to 9,600 bit/sec.

The 723 is priced at \$9,618 or \$360/month rental. Compatible line adapters are available for \$656 to \$1,744 with rentals ranging from \$35- to \$75/mo. The firm is located on Daniel Webster Highway South, 03060.

Coupler Handles BCD-to-TTY Data

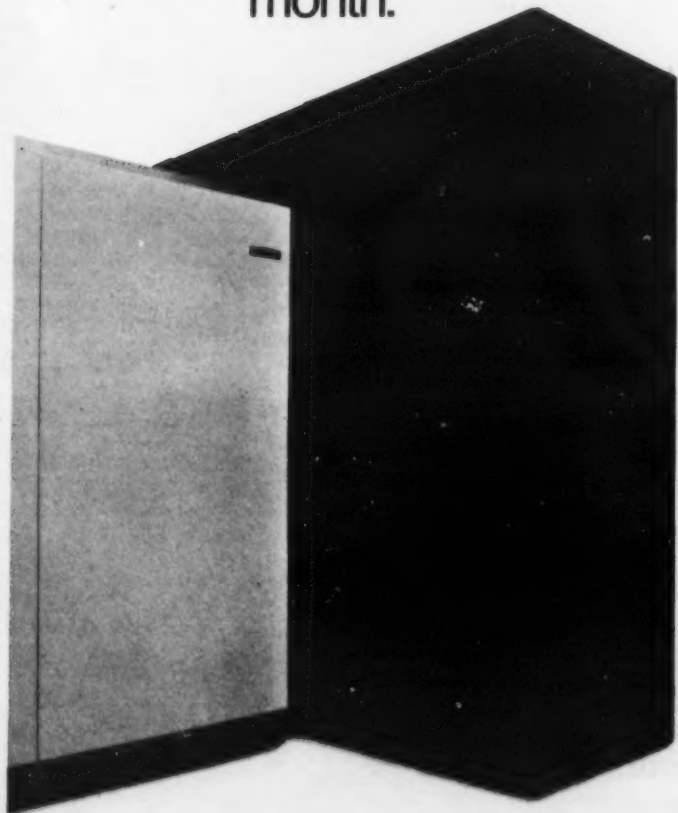
CLEVELAND — The Datac 617 data coupler accepts BCD-formatted data from instrumentation and other sources for direct input to model 33 or 35 Teletypes.

The 617 generates both hard copy printed output and paper tape as digital information is received.

The data coupler will accept up to eight BCD digits per word from several sources. Up to 18 data words per line can be handled.

The 617 is priced at "about \$1,000" according to a spokesman and is available 45 days after order. Datac Inc. is at 1773 South Taylor Rd., 44118.

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Midwest: International Computer Brokers, 110 S. Dearborn St., Chicago, Illinois (312) 368-4325

Bits & Pieces

Teletypewriter Replacement Uses Selectric, Paper Tape

POMPTON LAKES, N.J. — A line of teletypewriter replacements, based on a modified Selectric typewriter and paper tape equipment, is available from Terminal Equipment Corp. The Tycom 35/37 line comes in keyboard, automatic, or console send-receive, or automatic letter writing and send-receive configurations.

A dataset or acoustic coupler is included in the system. Operators have three modes to choose from; interactive, for direct communication with computers; local, for off-line typing and punching; and batch, for tape transmission at 30 char/sec. Prices start at \$3,200 for the keyboard send-receive model, and delivery is 30-60 days. Terminal Equipment is at 750 Hamburg Turnpike, 07442.

Disks for DEC Computers Are 1130, 1800 Readable

BERKELEY, Calif. — A series of disk drives from Data Systems Design can be used on DEC minicomputers, and produce recorded cartridges that can be read on IBM 1130 and 1800 systems. The systems' controllers permit program control of 1130 formatting of the 2315 disk cartridge, as well as track-selectable write protect boundaries, automatic head positioning verification, write verification, and control capability for as many as four drives.

The drives can be used on PDP-8s, 9s, 11s, 12s, and 15s. Prices for the Series 130 range from \$9,845, with delivery in 30 days. Data Systems Design is at 1122 University Ave., 94702.

Mini to Use Microprogramming

OCEANPORT, N.J. — Interdata will announce in a month two new minis, one of which will feature dynamically alterable microprogramming.

Mini Tape Has Big Features

HAYWARD, Calif. — The Qantape cartridge magnetic tape transport offers multi-track read-after-write heads, two precision capstans and pinch rollers close to the heads, back-spacing to re-read and re-write, direct front loading, and edge-loaded guiding. Storage capacity is over 100 kbytes, tape speed is 30 in./sec, and fixed record length is 128 characters. Data transfer rate is 5,000 char/sec. The price for a dual drive Qantape is about \$5,000, and is available from Qantel Corp., 3474 Investment Blvd., 94545.

Card, Tape, Printer

Univac Extends Peripherals for 9000s

By Michael Merritt
Of the CW Staff

BLUE BELL, Pa. — Univac has added three peripheral systems to the complement for the 9000 series of small computers, boosting maximum card read speed to 1,000 card/min, adding 1,600 bit/in. phase-encoded tapes, and offering a mid-dling-fast line printer.

The true use for the line printer is numeric printing, where it can operate at 2,000 line/min over 132 print positions. For full alphanumeric, the speed goes down to 840 line/min. Available on the 9200-II, the 9300, the 9300-II, and the 9400, the printer has a 94 character set, optionally expandable to 108 characters.

The printer can be purchased for \$46,545, and rental is \$1,070/mo, while maintenance is \$355/mo. Rental prices do not include maintenance.

Tape Drive

The Uniservo 12, a 1600 bit/in. phase encoded tape drive, is now available for the 9200-II and the 9300-II. Previously the units could be had on the 9400 only.

The 12 has twice the data transfer rate and twice the density of previous 9200 and 9300 series tape drives. The effective

throughput rate is not doubled, however, because the units are connected through the selector channel, and computing is suspended while the channel is in use.

The Uniservo 12 has in-flight single track error correction, and is data compatible with IBM's 2404, 2405, and 2406 tape units. The controller to run up to 16 non-simultaneous drives costs \$22,185.

Rental is \$510 and maintenance is \$90. A Master to run three drives costs \$20,015, rents for \$460, and can be maintained for \$100. The slave drives cost \$11,745 each; rental is \$270 and

maintenance is \$70.

Previously, the fastest card reader for the 9000 series was 600 card/min. The new 1,000 card/min reader can be used on the 9200-II, and the 9300-II, as well as the 9400 and 1100 series.

Options include an alternate stacker fill feature, two short card features, and a validity check for double punches in the first seven columns.

Users can buy the reader for \$13,680. Rental is \$285 and maintenance is \$90.

Deliveries of the units are variously scheduled for late 1971 and early 1972.

Hard Copy Graphics on Terminals Possible Through Plotter Option

IRVINE, Calif. — A self-contained interface option for the Valtec Series 2000 digital plotters allows plug-compatible operation from TTY or CRT terminals to produce hard-copy graphic plots. A data protocol hard-wired into the plotter allows the plotter to bring its own software to the terminal.

Programming the plotter is accomplished by the operator from the Ascii keyboard of the terminal by inserting the plotter control characters.

The print-out of data is identical to the data used for the plot, making verification or alteration of the operator-generated program extremely simple.

Information is contained in 7-bit Ascii characters. Specific character groupings can be decoded by the plotter for operation, and all other characters are ignored.

Control groupings are entered from the Ascii keyboard of the terminal by the operator as program steps. The plotter is fully conversational and totally transparent to the computer.

The unit can be used on any time-shared or in-house computer having Ascii output, or it can be used off-line by the operator or from a tape unit. The interface can be selected for EIA RS-232B or TTY at 110- or 300 bit/sec.

The X-Y graphic terminal option Number 121 is available in two Series 2000 digital plotters. The Model 2024/121, priced at \$3,600, features automatic chart advance. Advancing the paper is under program control and each sheet is accurately indexed, thus allowing the plotter to be operated unattended for multiple runs.

The Model 2021/121 uses standard 11 by 17 in. single sheets of paper manually loaded. Either plotter can accommodate pre-printed forms, which greatly reduce the amount of data to be transmitted and the plotting time, according to the firm.

The Option 010 point symbol generator priced at \$395 is available for both the Valtec Model 2024/121 and 2021/121 digital plotters. Delivery of all items is stock to 30 days. Valtec Corp. is at 17751 Sky Park Circle, Box BT, 92664.

Digitizer Operates on 70mm Film

MINNEAPOLIS — A high performance 70 mm film scanner, the Dicomed 56 Image Digitizer converts images recorded on transparencies to digital information. It offers scanning resolutions of 256, 512, 1,024, and 2,048 points per axis, as well as four scan speeds, a choice of 64 or 256 gray levels, scanned area selection, and transmittance signal range expansion and histogram presentation.

The unit may be used either as an off-line image digitizing system utilizing a tape unit, or may be interfaced directly with a digital computer, Dicomed said.

Under Operator Control

Commands and operating parameter selection can be accomplished under operator control or from a connected computer. The basic unit accommodates single slide black and white transparencies, and options are available to handle 70 mm roll film either manually or automatically, and color transparencies.

Normal modes of operation include raster scanning, and random point scanning, as well as selected area scanning. Scan times range from 2.1 sec to 90 min, depending on the selected resolution and rate. Output is in either six or eight bit code.

Applications include remote sensing, X-ray analysis, analysis of aerial photographs, multispectral analysis, and micro-film digitizing, Dicomed said.

The unit costs \$40,900. Dicomed is at 7600 Parklawn Ave., 55435.

PDP-11 Add-on Memory Uses Plated Wire

DENVER, Colo. — A plated-wire add-on memory for DEC's PDP-11 with a maximum capacity of 64K (16-bit words), Nemonic Data Systems' NM-8000 series comes in 4K and 8K modules.

The system is plug-compatible with the PDP-11's memory, and is mounted in a separate cabinet. The units include interface, power supply, and cable connections. The Nemonic system operates at cycle times of 500 nsec, while the 11's native memory has a cycle time of 850 nsec, according to Nemonic.

The plated wire memory is read-only, and offers non-destructive readout. A direct replacement of 16K from Nemonic costs \$10,800, while the price for the same units from DEC is \$14,000, the company said.

Nemonic is at 1301 W. Third Ave., 80223.

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COMPUTER INDUSTRY

a Computerworld news section about the nation's fastest growing industry

August 18, 1971

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CI Notes

Sycor Jumps Into Japanese Market

ANN ARBOR, Mich. — Sycor is the latest U.S. firm to announce plans to penetrate the Japanese computer market. The manufacturer of data communications systems based here has signed a three-year marketing agreement with Mitsui & Co. of Tokyo, under which Mitsui will establish an end-user marketing organization including a maintenance and service unit.

Nippon Univac Kaisha, Ltd. and Tokyo Officeation Co. Ltd. will join Mitsui in the initial effort, which expects to see the first deliveries next month.

According to Sycor, the Japanese market exceeded \$800 million last year and will increase to \$2.2 billion by 1974, with the growth in terminals expected to outdistance the growth rate in the U.S.

40% Cost Cut Set by Memory Technology

SUDBURY, Mass. — Memory Technology Inc. plans a 25% to 40% price reduction on small braid systems which meet 200 nsec access time and 500 nsec cycle time specifications. Complete systems now cost as low as a penny per bit in volume.

Space Computer Designed by Honeywell

ST. PETERSBURG, Fla. — A spaceborne computer from Honeywell's Aerospace Division is being built here as part of the control system for Applications Technology Satellite F&G due for launch on 5-year missions in 1973 and 1974. First deliveries of the model 401 are scheduled for November under the \$10 million ATS system contract from Fairchild Industries, prime contractor for the twin technology spacecraft for Nasa.

The 16-bit 401 uses a 4K-word plated-wire memory, expandable in 512-word increments to 8K. It features a 1 μ sec memory cycle time. Add time is 10 μ sec and multiply 90 μ sec.

Twin 401s will control all modes of spacecraft attitude control operations including control-loop computations for stabilization, earth, sun and Polaris acquisition, offset pointing, satellite tracking, slew maneuvers and all necessary analog-to-digital and digital-to-analog conversion.

Cogar 'Death' Exaggerated

LONDON — Reports of the likely death of the Cogar Corp. are "highly exaggerated," George Cogar, president, said here recently. Cogar admitted that the course of the company had changed since he launched his European subsidiary in February 1971.

Greater emphasis is now being placed on the Cogar 70 add-on memories, first deliveries due soon. Staff cut-backs had been made in keeping with the new policies. A future was also still seen for the system 4 terminals, and one of the purposes of the European visit was to talk to potential marketing outlets.

Supershorts

Data 100 Corp. has been selected by NCR to supply the DATA 100 Model 73 interactive display terminals for use with NCR computer systems.

Data Products Corp.'s System/6000 large core store has surpassed 10,000 hours of use in IBM computer systems since the first installation seven months ago. This operational milestone amounts to more than 1.5 trillion machine cycles.

Bucode Inc. has landed a contract from Tracor Data Systems Inc. for an estimated value of \$5 million under which Tracor will purchase and remarket automatic loading magnetic tape systems plug-compatible with IBM 2401, 2420 and 3420 equipment.

A series of disk memory substrate test system capable of testing third generation disk substrates, blanks, coated and plated surfaces has been introduced by Three Sigma, Inc., a subsidiary of Computest Corp. Named the ST-100, the new test systems are designed for dynamic testing of 14 in. by .050 in. or .075 in. thick disks that are used in IBM and compatible disk packs.

Electronic Associates, Inc. has purchased Visual Educom, Inc. for \$1.6 million. An EAI subsidiary of the same name has been formed to own and operate the business.

Data General Corp. has begun shipment of its Nova 1200 minicomputers to the Nippon Mini-Computer Corp., in Japan. The Japanese company is using the computers to make deliveries to its first customers.

Information and Computing Centers Corp. has won an OEM contract for cathod ray tube (CRT) monitors from Four Phase Systems, Inc. This order is an extension of a contract awarded earlier this year and is in excess of \$400,000.

Second Hand Computer Dealers Disagree Over Price Drops for IBM 360/30s, 40s

By Edward J. Bride
CW Staff Writer

ELMSFORD, N. Y. — As with other used equipment or machinery, computers do not have a "straight line" of depreciation.

Used computer dealers claim prices of IBM 360/30s have dropped as much as 22% over the last year, and forecast much the same for 360/40s, while others say the 40s may actually increase.

Time Brokers, Inc., said a 30 with 65K of core might go for 22% less than it did 12 months ago. Prices for used 40s have dropped 9% in the same period, according to Joseph W. Kirby,

vice-president of the Equipment Division.

Kirby said he expected a "further substantial drop" in 40 prices during the next year, but officials at American Used Computer Corp. in Boston disagreed.

There is a "natural" market for 360/40s, according to Adolf Monosson, president — the current users of model 30s, who, according to Monosson, do not have a "ready-made" market in which to dispose of their used equipment.

The demand for used 360/40s, then, will continue in the users of the 30s, and will temper or even negate the price drop.

In fact, Monosson indicated,

there have been instances when the price of a used 360/40 actually increased over a period of time.

Monosson's prices for 360/30s dropped around 10% in a period of two weeks, he said, after IBMs announcement of price reductions in exchange for longer, fixed-term leases on peripherals.

The cuts are apparently based on users taking advantage of the offer while keeping all-IBM systems.

In Atlanta, Tom Williams, president of TLW Computer Industries, said prices had actually gone up in the last 90 days. Noting the used computer business is "strictly supply and demand," Williams said model 30s had increased about 5% over three months ago, and the same held true for 40s.

While the market for used 30s might have been hurt by IBM's introduction of the 360/22, the same could happen if IBM does the same with model 40s that have been returned.

There are several people who believe "another 22" is forthcoming, Williams noted.

Kirby said few companies were releasing their 40s now, "most seem to be waiting for delivery of a 370/145," he related. Once the 370s start moving, "the supply of 40s will undoubtedly become substantial," he added.

This is only true if the economy improves, Williams stated. But if the general economy stays exactly as it is today, users will not spend what they had originally planned and, if their 30s and 40s are doing the job, then they may just decide to keep them, he added.

Computer Lessors Plan 360 Sales In Eastern European Countries

CW Washington Bureau

WASHINGTON, D.C. — The Computer Lessors Association is exploring the possibility of some of its member companies selling IBM System/360 computers in their inventory to East European countries.

According to James F. Benton, CLA's executive director, the Eastern market "could be a heck of a source of revenue in future years" for leasing companies.

Under current export laws, the Department of Commerce must approve a license for each machine ticketed for a Communist nation. Leasing companies would be expected to sell, rather than lease, the equipment to those countries, Benton said. "It

would be more advantageous to do so."

He emphasized that each member of the association would determine for itself whether or not it would sell to the Communists. He added that while CLA is exploring trade with Eastern Europe, it is not pursuing trade with Mainland China at this point.

"We're looking at modest selling goals to Eastern Europe in the beginning," Benton said.

One problem would be the servicing of machines, since IBM does not service any System/360's it has sold to East European countries. IBM would continue this policy if leasing companies were to sell computers to the Communists, a spokesman at IBM World Trade said. A reason for IBM's position, he explained, is that the corporation does not have companies in those countries.

UK Government Will Continue ICL Supports

By a CW Staff Writer

LONDON — The British government has reaffirmed its commitment to the development and strengthening of the British computer industry and International Computers Ltd. in particular.

A strong statement issued by the government notes "the key importance of the computer industry and the vital part it has to play in the industrial life of the country."

It further stated the government will "pursue a procurement policy for computers for government use which is deliberately designed to strengthen ICL's position in the marketplace, and we have urged the nationalized industries and other bodies in the public sector to follow a similar policy."

The government also announced it would continue "the advanced computer technology project" to reinforce the industry's research and development programs, and will up its commitment to the development of new products and applications.

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Smoker's Cough

A machine that "smokes" cigarettes a pack at a time is helping IBM engineers test and evaluate the effects of smoke on computers at IBM's General Systems Division Product Test Laboratory in Rochester, Minn. Cheryl Ferguson controls the machine whose two cylindrical "lungs" automatically "puff" and "exhale" the smoke into the test chamber in the background. Because IBM's System/3s and System/7s are being operated in non climate-controlled environments, new methods such as the cigarette smoking machine are used to test product reliability.

Quadri Optical Memory Employs LEDs

PHOENIX, Ariz. — An optical ROM memory system — the Model 401-22 from Quadri Corp. — uses fiber optics rather than the lens system found in conventional optical memories.

The Model 401-22 offers storage capacities of up to 50 kbits per system on Quadri standard 11-by-13 in. printed circuit boards. It is TTL compatible and can be dot OR'd.

Standard access time is 150-200 nsec.

The system operation begins with the address input activating word drive transistors. The word drive transistors select one unique light emitting diode (LED). The LED illuminates a specific line of holes via the Radiation Distribution Plate to the photomask. The mask either blocks or passes the radiation (according to the predetermined program) and directs the radiation to the light detecting diodes (LDD). Signals from the LDDs are amplified and transmitted to the output terminals.

The firm is at 2950 West Fairmont, 85017.

Caelus Shows New Mini Disk File

SAN JOSE, Calif. — The Series/300 disk file system from Caelus is designed to interface with

small general purpose digital computers. The disk drive features a Caelus CM111 disk pack (IBM 5440 compatible) as a new addition to their Disk Pack product line.

The first model of the series is the CD 348 which is a two-disk system with a 48 Mbit capacity. It includes a removable and fixed disk, both of which operate at 2,200 bit/in.

Each system has an average access time of 60 msec. A unique voice coil actuator provides precise head position control, Caelus said.

Series/300 can be configured to specific OEM requirements with quantity discounts from the \$7,000 basic price, according to Caelus Memories at P.O. Box 6297, 95133.

Sycor Markets Cassette Recorder

ANN ARBOR, Mich. — Sycor is offering the Model 125 digital cassette recorder to the OEM market.

The Model 125 Philips-type cassette recorder reads and writes at 12.5 in./sec, providing a data rate of 10 kbit/sec at 800 bit/sec packing density. This speed is coupled with 20/25 msec start/stop times and a 0.5 inch inter-record gap. Rewind time is 30 sec for a 280 ft cassette. Storage capacity is 224,000 characters in 100-character records.

The unit incorporates one bi-directional servo-controlled capstan, two torque-controlled reel motors and a loading mechanism on a common reference plate.

Three plug-in electronics cards are included in a complete assembly. The elec-

New OEM Products

tronics are modular, permitting the Model 125 to be purchased as a mechanism only or with various combinations of read-write, motion control and logic electronics.

The firm is at 100 Phoenix Dr., 48104.

AMS Announces 4K by 8/9 RAMs

SUNNYVALE, Calif. — Advanced Memory Systems is now offering 8 or 9 bit storage cards.

The 4K by 8 card is identified as AMS 855003 and the 4K by 9 card, AMS 855004. These cards are 6-by-7-1/2 in. and using one timing and control card, the user can build up from the basic 32- or 36 kbits to a maximum of 256- or 288 kbits with eight storage cards.

Features include: 500 nsec access time; 950 nsec cycle time; TTL-compatible inputs and outputs; non-destructive read-out, and card select input for simple memory expansion.

The cards are priced approximately 2.5 cent/bit in quantities of 25 from the firm at 1276 Hammerwood Ave., 94086.

PEC Reaches 18.75 ips Tape Speed

CHATSWORTH, Calif. — Peripheral Equipment Corp.'s new 7 in. reel tape transports have 18.75 ips tape velocity.

Purchased in quantities of 100, the 1,600 cpi read-after-write sells for \$3,010, and the 1,600 cpi write/read for \$2,630. PEC also offers data formatters compatible with the 7000 Series which will allow the same magnetic tape controller to handle 9-track, 1,600 cpi phase-encoded and 800 cpi NRZI Ansi and IBM compatible formats. PEC is located at 9600 Irondale Ave., 91311.

Spectrum Sets 3 ROM Programmers

FT. LAUDERDALE, Fla. — Spectrum Dynamics, Inc. has announced fusible-link programmers for three manufacturers' field programmable semiconductor ROMs in addition to the Model 402, designed specifically for Harris HPROMs.

Monolithic Memories' devices can be programmed on the Model 423, while Model 420 is for Signetics units. Both are available at \$1,390. The Model 411, designed for Motorola MCM5003 devices, sells for \$1,470.

The company is at 2300 East Oakland Park Blvd., 33306.


We'll give you a lift

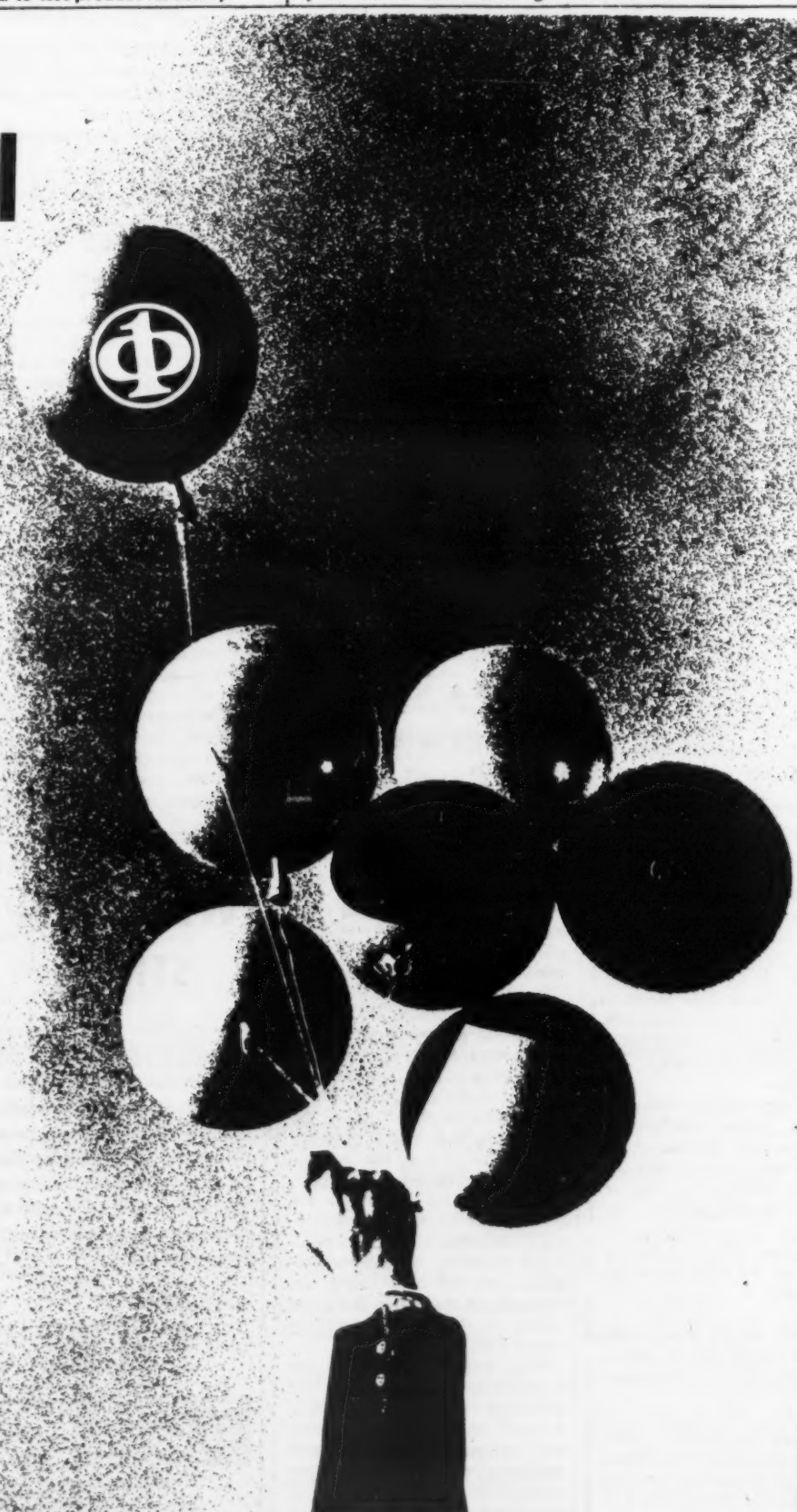
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Legislation Introduced To Ease East-West Trade

CW Washington Bureau

WASHINGTON, D.C. — Legislation that could have a profound influence on future computer trade with Communist countries has been introduced in the Senate.

The East-West Trade Exchange Act of 1971 would set up an exchange of businessmen and trade experts with the Soviet Union, Eastern European nations and Mainland China in an effort to increase trade between those countries and the United States.

Co-sponsors of the measure are Sen. Abraham A. Ribicoff (D-Conn.) and Sen. Warren G. Magnuson (D-Wash.).

The bill would enable Americans selected for the program to spend a year or two abroad,

studying the marketing and trading systems of the Communist nations. On their return to the U.S. they would have a better idea of what and how to trade with the nation in which they lived.

Ribicoff sees the exchange also aiding this nation's balance of trade, currently heading for its first deficit since 1893 [CW, Aug. 4].

The program proposed by Ribicoff and Magnuson would be administered by the Department of Commerce with help from the State Department. Review and evaluation would be conducted by a 10-man advisory council whose members would report to the President and the Secretary of Commerce.

Air Force Space and Missile Unit Plans to Build Modular Computer

LOS ANGELES — By the mid-1970s, Air Force Space and Missile Systems Organization (Samso) hopes to build and flight test a spaceborne computer capable of diagnosing and repairing spacecraft malfunctions and fixing its own failures, independently of the ground.

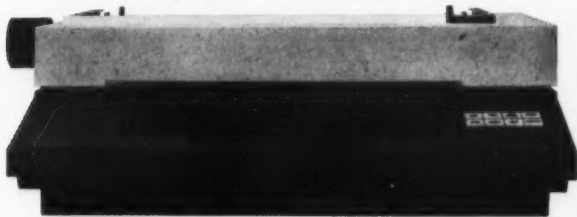
As seen by Samso officials, the system might consist of standard modules that could be organized into computers for specific mission requirements. This would facilitate checkout of the system and increase reliability. Some of the modules would be carried as on-board spares.

Design requirements would include a five-year lifetime and nuclear survivability. Data rate capabilities would be on the

order of 200 million bit/sec, a large part of which would be reduced on board the spacecraft.

Present day ground computer systems are slowly becoming overworked. Spaceborne computer systems, say Samso engineers, would lighten future workloads on ground based systems, and be cheaper in the long run by reducing development costs.

Samso has awarded two systems definition contracts totaling \$200,000 to Raytheon and Ultra Systems. The contractors will not only determine what type of computer is needed for on-board spacecraft computations but will also identify technologies that must be developed before the spaceborne computer becomes a reality.



This is the real-time computer terminal that's 48 pounds *portable*. The lightest Selectric available. Carrying case is available too. It's the model 5-41, and has a speed of up to 15 chars. per second, and the wide 15" platen.

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It means usability.

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It means reliability.

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New Add on Core for System 360

The lowest price available

The new Model 3768 Storage Unit lets IBM 360 System users expand their system's memory at the lowest price available.

By utilizing the host processor and its time-proven system diagnostics for preventive maintenance as well as remedial maintenance, costly built-in test equipment has been eliminated.

The Model 3768 offers direct plug-to-plug compatibility with no complex interfacing or programming changes, available in standard IBM storage capacities including the Model 30 2.0 micro-second processor.

All CHCS memory systems are manufactured, installed and maintained by personnel thoroughly trained on IBM equipment including System 360 operation, testing, installation, and operational maintenance.

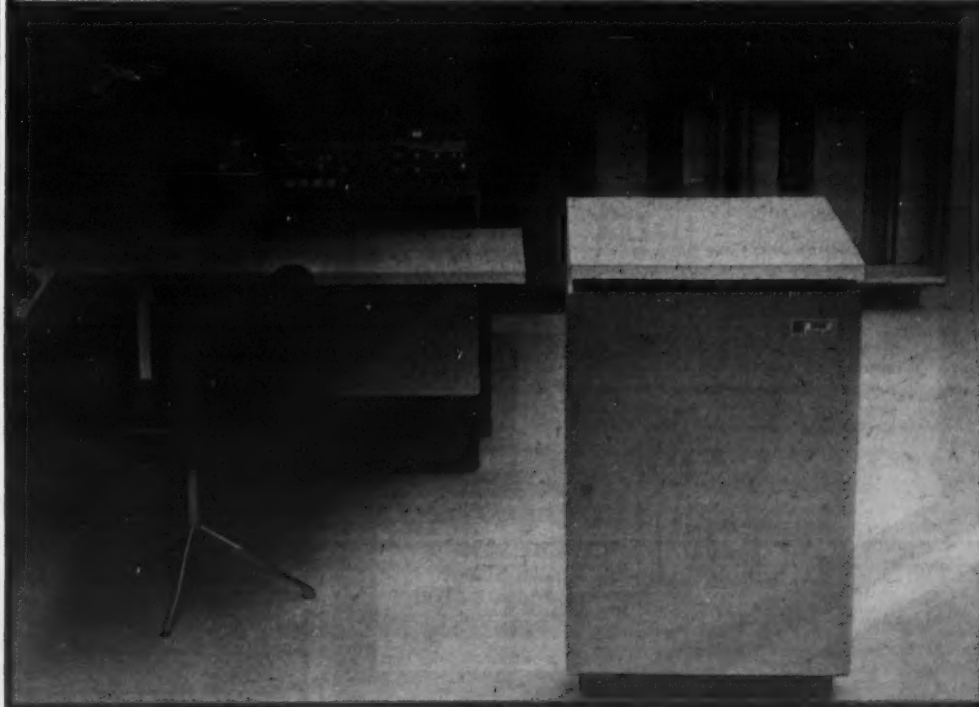
Use of CHCS memory systems will not affect your existing IBM mainframe maintenance contract.

The Model 3768 Storage Unit is available immediately for sale or lease.



Computer Hardware Consultants & Services, Inc.

1409 Easton Road, Warrington, Pa. 18976 215-343-1430



Position Announcements

SOFTWARE SYSTEMS

University of Virginia has several new openings in their expanding staff to provide software and scientific applications support on a newly installed CDC 6400 and an established B5500. Applicants must have a college degree and professional experience. Send resume and salary history to Mr. C. Plesums, Computer-Science Center, Gilmer Hall, U. Va., Charlottesville, Va. 22903.

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Lucrative Leasing Firms Upped by Two

By a CW Staff Writer

NEW YORK — Two new companies have joined the list of firms that found leasing lucrative [CW, Aug. 12] during their

latest reporting periods.

Data Processing Financial & General Corp. (DPF) reported increased earnings for the full year ended May 31, while Levin-Townsend Computer Corp. announced gains for the first quarter which ended on June 30.

DPF's earnings of \$5.4 million (\$1.37 per share) compared with a loss of \$4.3 million (\$1.14 per share) in the prior year. The gains came on relatively static revenues of \$49.6 million, compared with \$49.4 million in the year earlier period.

At Levin-Townsend earnings were \$533,953 (16 cents per share, before an extraordinary gain of \$220,890 (7 cents per share), resulting in a net income of \$754,842 (23 cents per share) for the quarter. Total revenues reached \$12.7 million in the quarter.

In the same quarter a year ago, the firm reported income of \$591,897 (18 cents per share) including an extraordinary loss of \$247,918 (7 cents per share) on gross revenues of \$11.3 mil-

lion.

DPF reported it reduced obligations to banks and secured creditors during the last fiscal year by \$26.5 million while cash and marketable securities were increased \$3.2 million.

Financial

DPF's loss from its discontinued Systems Division amounted to \$117,000 net of tax benefit (3 cents per share) compared to a loss of \$4.8 million (\$1.28 per common share) for fiscal 1970. Extraordinary charges of \$448,000 net of tax benefit, (11 cents per common share), in fiscal 1971, consisted of a write-off of DPF's investment in Berkeley Computer Corp. offset by gains in the sale of Applied Computer Time Share, Inc. and the recovery on the settlement of DPF's lawsuit against IBM, Poppa said.

Levin-Townsend said all the company's operations were profitable.

If You're Planning Stock Fraud, Plan to Use 'Computer' in Name

NEW YORK — If you're going to sell worthless stock, you might as well put "computer" in the company name to make it more glamorous.

The Picture Island Computer Corp., previously known as EDP Learning Systems and now known as Leisuresources Limited, apparently has nothing at all to do with computers. It did claim to have \$50 million in assets including land and two dog tracks.

But a federal grand jury here that indicted eight men on stock

fraud charges said that the assets are virtually worthless. One of those indicted is John Lombardozzi, a reputed Mafia member.

Another of those indicted is Francis Peter Cosby of East Orange, N.J. A government source commented: "Crosby's been in this sort of thing before. He like the word computer — it's glamorous. Four of five of his companies have had computer in their name and some had nothing to do with computers at all."

MISSISSIPPI STATE CENTRAL DATA PROCESSING AUTHORITY

Advertisement for Bids
Sealed proposals will be received by the State Central Data Processing Authority, 508 Robert E. Lee Building, Jackson, Mississippi 39202, up until 2:00 p.m., Wednesday, September 8, 1971, for the following data processing equipment:
Request for Proposal No. 49 — Lease or Purchase of a medium scale, magnetic file oriented computer system to be used by Jackson State College for administrative and academic purposes. Used equipment will be considered.
Preliminary proposal specifications may be obtained from the office of the State Central Data Processing Authority. A bidder's conference will be held at 10:00 a.m., Wednesday, August 25, 1971. Prospective bidders not attending conference will be disqualified. The State Central Data Processing Authority reserves the right to reject any and all bids and proposals and to waive informalities.

STATE CENTRAL DATA PROCESSING AUTHORITY

Charles L. Guest
Executive Director

Nickels & Dimes

Business Development Services Inc. a subsidiary of General Electric has upped its stake in Interactive Technology Inc. to \$625,000. The agreement was negotiated by Fred Adler, the New York venture capitalist who also backs mini-maker Data General.

\$\$\$

Maybe the name change helped: Pertec, formerly Peripheral Equipment Corp., reported earnings of almost \$2 million on sales of over \$21.3 million for the year ended June 25, up from earnings of \$270,000 on sales of \$8.9 million a year earlier.

\$\$\$

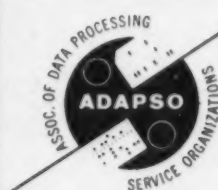
Infoton Inc. is now a wholly owned subsidiary of Optical Scanning Corp. after the completion of a merger that called for the exchange of 50,000 shares of Optical Scanning common.

\$\$\$

"Important expansion moves are in the final planning stages" at Electronic Associates Inc., according to Roy S. Mushrush, president. EAI earned \$184,000 on revenues of \$12.9 million during the 6 months ended July 2. This compares to a loss of \$3.4 million on sales of \$14.7 million in the same year-ago period.

\$\$\$

"Lower than anticipated sales and heavy product development expenditures in the newly formed Raytheon Data Systems subsidiary" could not stop Raytheon from reporting "moderately improved" results for the second quarter and first half.



ANNUAL SURVEY OF THE COMPUTER SERVICES INDUSTRY

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Computerworld Stock Trading Summary

All statistics
compiled, computed
and formatted by
TRADE-QUOTES, INC.
Cambridge, Mass. 02139

CLOSING PRICES WEDNESDAY, AUGUST 11, 1971

| E X C H | | PRICE | | | |
|--------------------------|----------------------|----------------------|-------------------------|---------------------|----------------------|
| | | 1971 RANGE (1) | CLOSE AUG 11 1971 | WEEK NET CHNG | WEEK PCT CHNGE |
| SOFTWARE & EDP SERVICES | | | | | |
| O | ADVANCED COMP TECH | 1- 4 | 1 3/8 | - 1/8 | -8.3 |
| A | APPLIED DATA R & S | 5- 13 | 5 1/2 | - 3/8 | -6.3 |
| O | APPLIED LOGIC | 1- 3 | 3/4 | - 1/8 | -14.2 |
| O | ARIES | 1- 2 | 1 | 0 | 0.0 |
| N | AUTOMATIC DATA PROC | 44- 65 | 55 7/8 | +2 5/8 | +4.9 |
| O | AUTO SCIENCES | 4- 8 | 4 3/8 | 0 | 0.0 |
| O | BOOTH DATA SYS | 1- 2 | 1 | 0 | 0.0 |
| O | BRANDON APPLIED SYS | 1- 1 | 1/2 | 0 | 0.0 |
| O | COMPUTER ENVIRON | 1- 2 | 3/4 | 0 | 0.0 |
| O | COMPUTER NETWORK | 2- 11 | 4 1/8 | - 1/8 | -2.9 |
| O | COMPUTER PROPERTY | 5- 11 | 5 1/4 | - 1/4 | -4.5 |
| N | COMPUTER SCIENCES | 9- 17 | 9 3/8 | + 1/8 | +1.3 |
| | | | | | |
| O | COMPUTER TASK GROUP | 1- 3 | 1 1/2 | - 1/4 | -14.2 |
| O | COMPUTER USAGE | 5- 16 | 7 1/8 | - 1/4 | -3.3 |
| O | COMP AUTOMOT REPORTS | 6- 13 | 9 | -1 1/2 | -14.2 |
| N | COMPUTING & SOFTWARE | 27- 45 | 28 3/4 | + 1/4 | +0.8 |
| O | COMRESS | 2- 4 | 2 1/8 | - 1/8 | -5.5 |
| O | COMSHAR I | 4- 8 | 4 1/4 | - 1/8 | -2.8 |
| | | | | | |
| O | CONSOL. ANAL. CENT. | 1- 2 | 1 | 0 | 0.0 |
| O | DATA AUTOMATION | 1- 4 | 1 1/8 | - 1/4 | -18.1 |
| O | DATA PACKAGING | 6- 10 | 8 3/8 | 0 | 0.0 |
| O | DATAMATION SERVICE | 1- 3 | 7/8 | - 1/8 | -12.5 |
| L | DATATAB | 4- 10 | 6 1/2 | - 1/4 | -3.7 |
| O | DIGITEK | 1- 4 | 1 1/8 | 0 | 0.0 |
| | | | | | |
| O | EDP RESOURCES | 7- 16 | 8 1/2 | + 1/2 | +6.2 |
| A | ELECT COMP PROG | 3- 7 | 3 1/8 | 0 | 0.0 |
| N | ELECTRONIC DATA SYS. | 53- 85 | 56 7/8 | +3 3/4 | +7.0 |
| O | INFORMATICS | 7- 15 | 9 3/8 | + 1/8 | +1.3 |
| A | ITEL | 11- 23 | 11 7/8 | + 1/4 | +2.1 |
| O | KEANE ASSOCIATES | 5- 14 | 6 | - 1/4 | -4.0 |
| | | | | | |
| O | KEYDATA CORP | 8- 14 | 8 | + 1/4 | +3.2 |
| A | MANAGEMENT DATA | 8- 11 | 7 3/4 | 0 | 0.0 |
| O | NATIONAL CSS INC | 7- 14 | 8 | 0 | 0.0 |
| O | NAT COMP ANALYSTS | 1- 4 | 1 | - 1/8 | -11.1 |
| O | NAT.COMP. SERV. | 1- 4 | 7/8 | 0 | 0.0 |
| N | PLANNING RESEARCH | 16- 26 | 17 1/4 | - 1/2 | -2.8 |
| | | | | | |
| O | PROGRAMMING METHODS | 18- 29 | 20 1/2 | -2 | -8.8 |
| O | PROGRAMMING & SYS | 2- 4 | 2 | - 1/8 | -5.8 |
| L | PROGRAMMING SCIENCES | 1- 3 | 1/8 | 0 | 0.0 |
| O | SCIENTIFIC COMPUTERS | 2- 3 | 2 1/4 | 0 | 0.0 |
| O | SCIENTIFIC RESOURCES | 1- 2 | 3/8 | 0 | 0.0 |
| O | SOFTWARE SYSTEMS | 1- 2 | 1 1/2 | + 1/8 | +9.0 |
| | | | | | |
| O | TBS COMPUTER CENTERS | 4- 9 | 4 | - 1/8 | -3.0 |
| O | TOLLEY INTL CORP | 3- 8 | 7 3/8 | + 5/8 | +9.2 |
| O | UNITED DATA CENTER | 2- 7 | 3 1/8 | 0 | 0.0 |
| N | UNIVERSITY COMPUT. & | 21- 38 | 26 1/4 | +1 5/8 | +6.5 |
| A | URS SYSTEMS | 6- 11 | 6 5/8 | - 3/8 | -5.3 |
| O | U.S. TIME SHARE & | 1- 3 | 7/8 | 0 | 0.0 |
| | | | | | |
| O | VORTEX CORP | 2- 5 | 2 3/8 | - 1/8 | -5.0 |
| PERIPHERALS & SUBSYSTEMS | | | | | |
| N | ADDRESSOGRAPH-MULT | 24- 48 | 36 | +2 3/8 | +7.0 |
| O | ALPHANUMERIC | 2- 6 | 2 | + 1/8 | +6.6 |
| N | AMPEX CORP | 14- 25 | 14 3/4 | + 5/8 | +4.4 |
| O | ASTRODATA | 1- 2 | 1 1/4 | 1/4 | +25.0 |
| O | ATLANTIC TECHNOLOGY | 3- 8 | 5 | - 1/4 | -4.7 |
| A | BOLT, BERANEK & NEW | 5- 8 | 4 7/8 | - 1/4 | -4.8 |
| | | | | | |
| N | BUNKER-RAMO | 10- 17 | 9 3/4 | - 1/8 | -1.2 |
| A | CALCOMP | 19- 33 | 20 1/4 | +1 1/4 | +6.5 |
| O | COGNITRONICS | 3- 9 | 3 | - 1/4 | -7.6 |
| O | COLORADO INSTRUMENTS | 2- 8 | 2 1/4 | 0 | 0.0 |
| O | COMPUTER COMMUN. | 6- 19 | 7 1/4 | + 1/8 | +1.7 |
| A | COMPUTER EQUIPMENT | 4- 7 | 4 1/8 | + 1/8 | +3.1 |
| | | | | | |
| A | COMPUTEST | 8- 20 | 8 1/8 | - 1/8 | -1.5 |
| O | CONSOL COMPUTER LTD. | 8- 12 | 8 | + 1/8 | +1.5 |
| A | DATA PRODUCTS CORP | 5- 10 | 5 5/8 | + 3/8 | +7.1 |
| O | DATA TECHNOLOGY | 3- 9 | 4 1/4 | - 1/8 | -2.8 |
| O | DIGITRONICS | 4- 8 | 4 3/4 | - 1/4 | -5.0 |
| N | ELECTRONIC M & M | 8- 16 | 10 5/8 | + 5/8 | +6.2 |
| | | | | | |
| O | FABRI-TEK | 2- 4 | 2 1/2 | + 1/8 | +5.2 |
| O | FARRINGTON MFG | 1- 3 | 1/4 | - 1/8 | -33.3 |
| O | FOTO-MEM INC | 1- 6 | 1 1/4 | 0 | 0.0 |
| O | INFOTEX INC | 25- 49 | 24 1/2 | -3 1/2 | -12.5 |
| O | INFORMATION DISPLAYS | 5- 8 | 4 7/8 | - 1/8 | -2.5 |
| O | MANAGEMENT ASSIST | 1- 2 | 5/8 | 0 | 0.0 |
| | | | | | |
| A | MARSHALL INDUSTRIES | 14- 27 | 15 1/4 | + 3/8 | +2.5 |
| A | MILGO ELECTRONICS | 13- 26 | 14 1/2 | + 3/4 | +5.4 |
| N | MOHAWK DATA SCI | 22- 47 | 24 3/4 | +2 1/2 | +11.2 |
| O | ON LINE SYSTEMS INC | 7- 18 | 9 | -1 1/4 | -12.1 |
| O | OPTICAL SCANNING | 10- 18 | 11 3/8 | +1 7/8 | +19.7 |
| O | PHOTON | 7- 12 | 7 7/8 | - 1/8 | -1.5 |
| | | | | | |
| O | PHOTO-MAGNETIC SYS. | 1- 6 | 2 1/4 | + 1/2 | +28.5 |
| A | POTTER INSTRUMENT | 13- 25 | 15 1/4 | +1 1/8 | +7.9 |
| O | PRECISION INST. | 7- 16 | 10 1/2 | +1 | +10.5 |
| O | RECOGNITION EQUIP | 12- 26 | 14 3/8 | +2 | +16.1 |
| O | REDCOR CORP. | 5- 9 | 5 1/4 | + 1/4 | +5.0 |
| N | SANDERS ASSOCIATES | 11- 22 | 12 7/8 | + 5/8 | +5.1 |
| | | | | | |
| O | SCAN DATA | 6- 15 | 10 3/8 | + 7/8 | +9.2 |
| O | TALLY CORP. | 8- 16 | 9 1/2 | +1 1/8 | +13.4 |
| N | TELEX | 13- 22 | 13 1/4 | + 1/8 | +0.9 |
| O | VIATRON | 1- 4 | 7/8 | 0 | 0.0 |

SUPPLIES & ACCESSORIES

| | | | | |
|-----------------------|--------|--------|--------|-------|
| N ADAMS-MILLIS CORP | 12- 19 | 11 7/8 | - 1/8 | -1.0 |
| O BALTIMORE BUS FORMS | 6- 10 | 7 1/2 | - 1/2 | -6.2 |
| A BARRY WRIGHT | 8- 13 | 7 3/4 | 0 | 0.0 |
| A DATA DOCUMENTS | 16- 29 | 16 3/4 | - 3/4 | -4.2 |
| O DUPLEX PRODUCTS INC | 8- 10 | 9 | 0 | 0.0 |
| N ENNIS BUS. FORMS | 8- 13 | 7 3/4 | - 5/8 | -7.4 |
| O GRAHAM MAGNETICS | 9- 35 | 20 | + 1/4 | +1.2 |
| O GRAPHIC CONTROLS | 6- 15 | 9 5/8 | - 1/4 | -2.5 |
| I MEMOREX | 27- 78 | 32 1/4 | +3 1/2 | +12.1 |

Earnings Reports

ELECTRONIC MEMORIES & MAGNETICS

Six Months Ended June 26

| | 1971 | 1970 |
|-----------|------------|------------|
| bShr Ernd | \$1.1 | \$2.0 |
| Revenue | 42,222,000 | 44,972,000 |
| Tax Cred | 1,124,000 | |
| Earnings | c2,202,000 | 1,567,000 |

a-Restated to reflect discontinued operations. b-Based on income before tax credit. c-Equal to 33 cents a share.

FOXBORO

Three Months Ended June 30

| | 1971 | 1970 |
|----------|------------|------------|
| Shr Ernd | \$4.3 | \$3.3 |
| Revenue | 40,913,000 | 34,758,000 |
| Earnings | 1,940,000 | 1,355,000 |
| 6 Mo Shr | .79 | .47 |
| Revenue | 78,967,000 | 67,713,000 |
| Earnings | 3,443,000 | 1,957,000 |

a-Restated by company.

VARIAN ASSOCIATES

Nine Months Ended July 2

| | 1971 | 1970 |
|----------|---------------|--------------|
| Shr Ernd | | \$6.3 |
| Revenue | \$138,043,000 | 148,007,000 |
| Spec Chg | \$2,486,000 | |
| Earnings | (Loss) | b(7,336,000) |
| | | 4,383,000 |

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